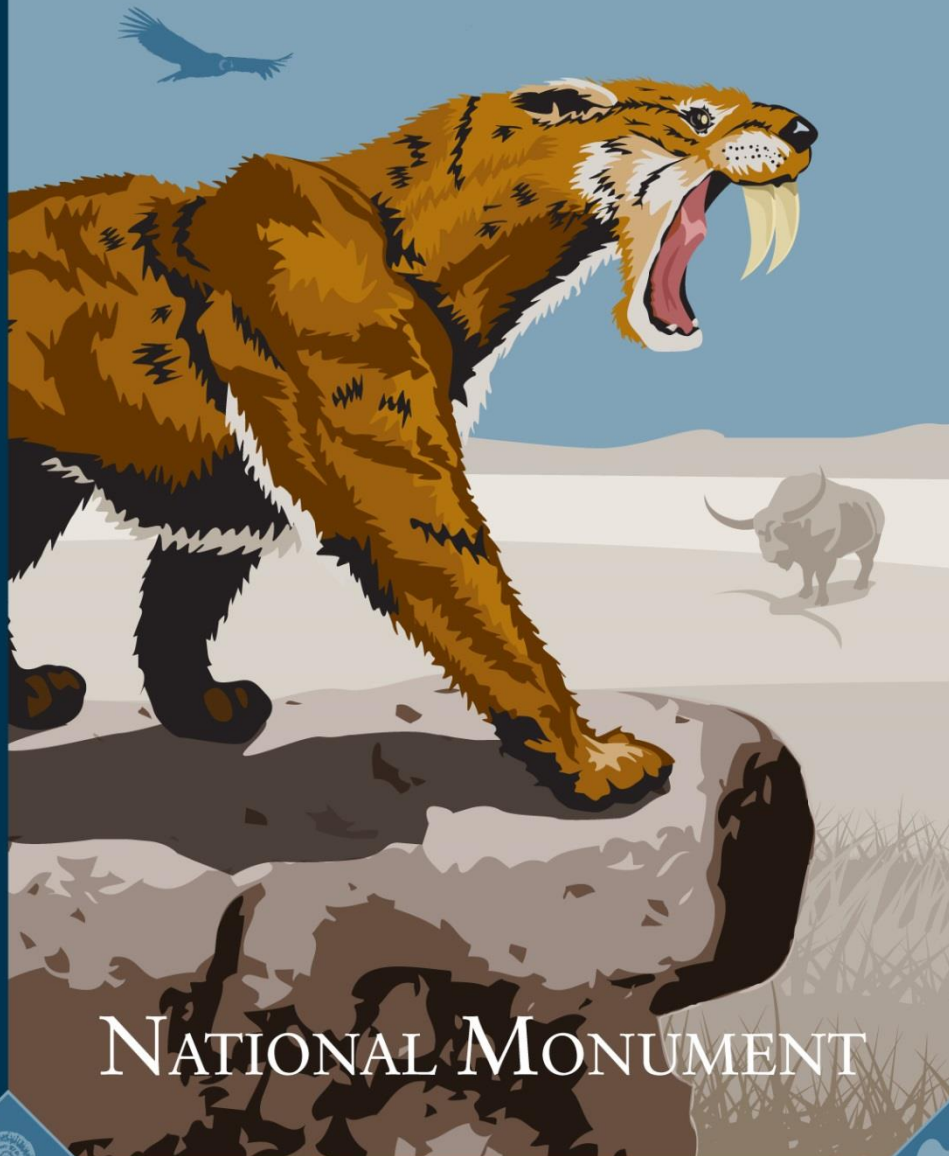


Teacher Resources

TULE SPRINGS FOSSIL BEDS



NATIONAL MONUMENT

6th – 8th Grade



Tule Springs Fossil Beds National Monument is one of our newest National Park Service sites and it is located right here in the Las Vegas Valley. The National Park Service and our partners, the Protectors of Tule Springs, are pleased to be a great resource for teachers looking for innovative ways to teach topics through the amazing resources of this fossil site.

The park preserves an amazing collection of fossil sites that have the potential to help us learn about a specific segment of the Pleistocene Era, also referred to as the Ice Age. Within the chalky soils of the park a wide range of animals are preserved. They include large, iconic animals like Columbian Mammoth, Shasta Ground Sloth, two extinct species of Bison, camel, and horses. These animals were drawn here at a time where the climate was cooler and damper and supported a variety of plants fed by spring waters. Where there are plant eaters, there are meat eaters. Saber-toothed cats, American lions, and dire wolves were fierce and canny predators. All of these animals are found in the soils of Tule Springs and many have been collected by paleontologists.

The park is in its infancy. It does not have a visitor center or facilities. We are entering the planning phase to determine what this national park site should offer. Undoubtedly, there will be a curriculum-based education program. We will need the assistance of dedicated teachers, like you, to help develop this curriculum so that it meets your needs.

Within this packet are some grade-specific activities that will allow you to introduce the idea that right here in our own backyard, fossils are preserved that tell us much about the world in which we live. We hope you find time to introduce the park to your students and we look forward to working with you on this exciting endeavor. We are grateful to the Waco Mammoth National Monument and Clark County educators for permission to use their activities.



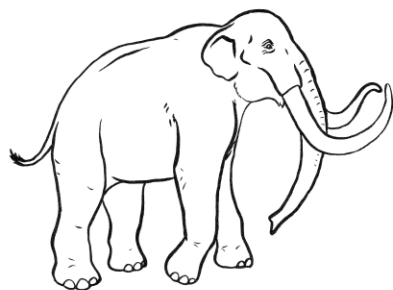
Comparing Cousins

Are Mammoths and Mastodons the Same?

The Pleistocene Epoch (pronounced “PLY–stuh–SEEN EP–uck”) is sometimes called the Ice Age. It started 2.5 million years ago and ended about 10,000 years ago. Even though people call it the Ice Age, not all the world was covered in ice. Sheets of ice covered most of what is now Canada and the northern United States, but the lands that became the southern United States and Mexico were not under ice. Mammoths and mastodons lived in North America during the Ice Age. These two types of elephants looked a lot alike, but they were really very different.

Columbian Mammoth

(pronounced “cuh–LUM–be–un MAM–uth”)



Columbian mammoths were grazers, or animals that eat mostly grass. To make sure they had enough to eat, they lived in savannas (“suh–VAN–uhs”). Savannas are warm grasslands with scattered trees. Their teeth had ridges, which ground up the grass they ate. Their tusks were long and curved.

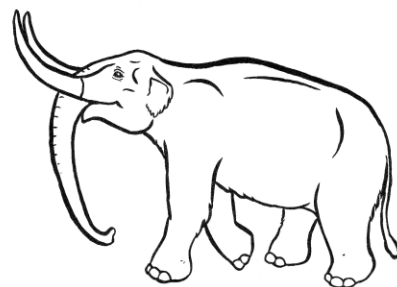
Columbian mammoths were about 14 feet tall, or 4.3 meters. They also weighed as much as 10 tons, the same as a school bus. Scientists first discovered Columbian mammoth fossils in 1857.

American Mastodon

(pronounced “uh–MEHR–eh–cuhn MASS–tuh–dahn”)

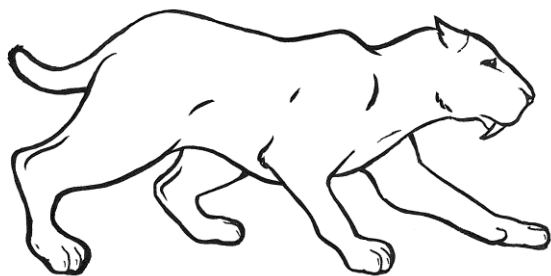
Mastodons were browsers, or animals that eat mostly leaves and twigs. They lived in forests or near lakes with a lot of trees. Their teeth had thick points, which could shred pieces of tree bark. Their tusks were almost straight.

American mastodons were about 8 feet tall, or 2.5 meters. They weighed as much as 5 tons, half the weight of a Columbian mammoth. Scientists first discovered American mastodon fossils in 1792.



1. Which animal was bigger, the Columbian mammoth or American mastodon?
2. What does a browser eat?
3. Which animal was discovered first, the Columbian mammoth or American mastodon?
4. Which animal had ridged teeth, the Columbian mammoth or American mastodon?

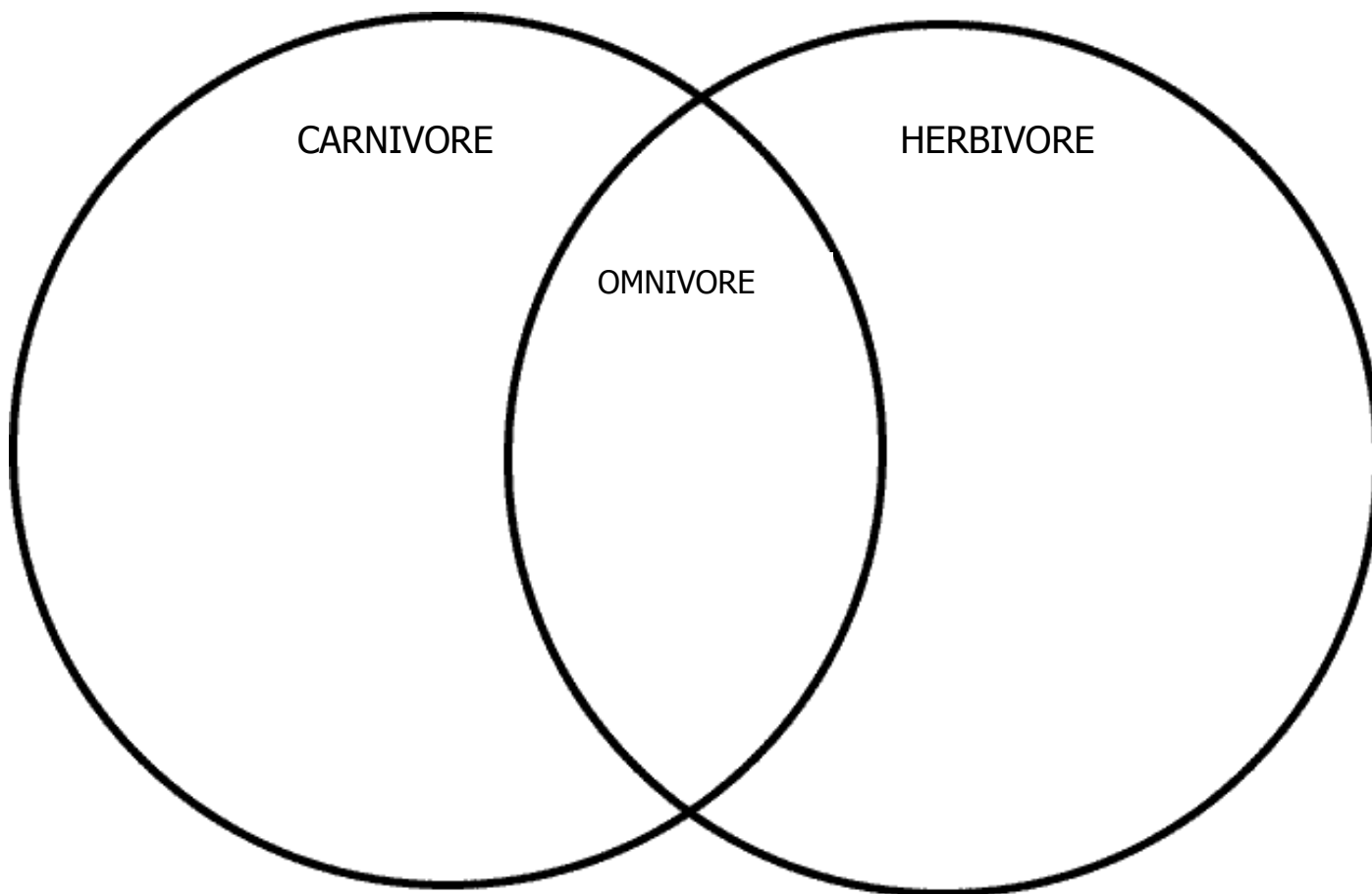
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Charting Chompers:

A Venn Diagram Exercise

This diagram shows how animals can be carnivores, herbivores, or a combination called omnivores. Write the names of the Ice Age animals in the correct area of the diagram according to their diet.



Mammoth
Saber-tooth cat
Woolly rhinoceros
Mastodon

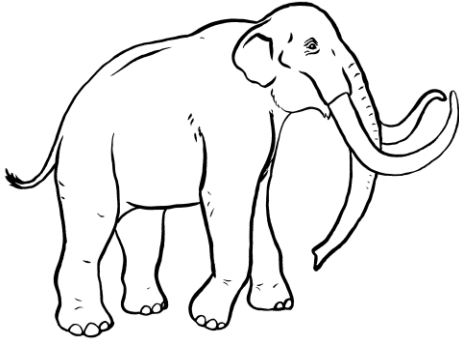
Short-faced bear
Western camel
Cave bear
Long-horned bison

American lion
Dire wolf
Ground sloth
White-tailed deer



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Name: _____ Date: _____



Meals for Mammoths

Columbian mammoths were some of the largest mammals that ever existed, and like many large animals, they were herbivores. Mammoths lived almost entirely on grass!

Scientists estimate the average Columbian mammoth ate 300 pounds of grass per day. At 245 calories per pound, this means one of these giants consumed 73,500 calories every day.

$$\frac{300 \text{ lb grass}}{1 \text{ lb grass}} \times \frac{245 \text{ calories}}{1 \text{ lb grass}} = \frac{73,500 \text{ calories}}{1 \text{ lb grass}}$$

What if mammoths had chosen other foods? How much would they need to eat then? We can use factor-label equations, like the example above, to find out.



Alfalfa

970 calories per pound

$$\frac{73500 \text{ calories}}{970 \text{ calories}} \times \frac{1 \text{ lb alfalfa}}{970 \text{ calories}} = \frac{\text{lb of alfalfa}}{970 \text{ calories}}$$



Corn

1536 calories per pound

$$\frac{73500 \text{ calories}}{\text{calories}} \times \frac{1 \text{ lb corn}}{\text{calories}} = \frac{\text{lb of corn}}{\text{calories}}$$



Oats

1765 calories per pound

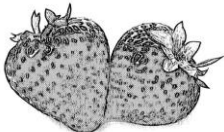
$$\frac{\text{calories}}{\text{calories}} \times \frac{1 \text{ lb oats}}{\text{calories}} = \frac{\text{lb of oats}}{\text{calories}}$$



Pumpkin

118 calories per pound

$$\frac{\text{calories}}{\text{calories}} \times \frac{1 \text{ lb pumpkin}}{\text{calories}} = \frac{\text{lb of pumpkin}}{\text{calories}}$$



Strawberry

145 calories per pound

$$\frac{\text{calories}}{\text{calories}} \times \frac{1 \text{ lb grass}}{\text{calories}} = \frac{\text{lb of grass}}{\text{calories}}$$

Name: _____ Date: _____

Decoding Names

Most scientific names are made by combining Greek and Latin words. Use this chart to decode the name of each Ice Age animal.

Archaeo (very old)	Don, Dont (tooth)	Onyx (claw)	Saur, Saurus (lizard)
Arcto (bear)	Dus (tooth)	Ops (face)	Seismo (earth-shaking)
Baro (heavy)	Glypto (carved)	Ornith (bird)	Smilo (saber)
Brachio (arm)	Gnathus (jaw)	Ovi (egg)	Stego (plated)
Cerat (horn)	Homo (same)	Pachy (thick)	Super (above)
Cryo (cold)	Lopho (crested)	Para (next to)	Terra (land)
Dactylus, Dactyl (finger)	Mega, Megalo (large)	Poly (many)	Therium, There (beast)
Di (two)	Micro (small)	Pro (before)	Thero (fierce)
Dino, Deino (terrible)	Mimus (imitator)	Proto (first)	Tri (three)
Diplo (double)	Mono (one)	Ptero (wing)	Veloci (swift)



Smilodon



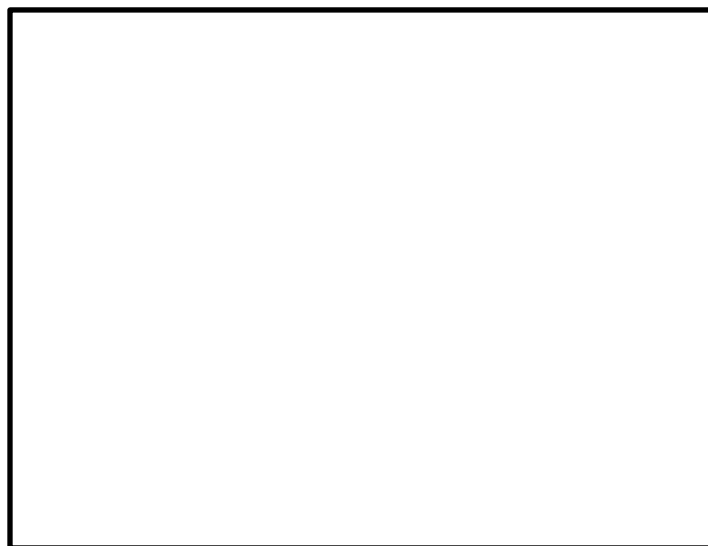
Glyptodon



Megatherium

New Species

While digging up fossils, you discovered a new animal! Draw a picture of your animal, and then use the chart to give it a scientific name.



➤ When did your animal live?

➤ What did your animal eat?

➤ How much did it weigh?

Scientific Name: _____



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